UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

BOB BAFFERT, *Plaintiff*, v. THE NEW YORK RACING ASSOCATION, INC., *Defendant*.	Civil Action No. 1:21-cv-03329-CBA-RML

DECLARATION OF PROFESSOR PIERRE-LOUIS TOUTAIN

PROFESSOR PIERRE-LOUIS TOUTAIN, pursuant to 28 U.S.C. § 1746(1), declares under penalty of perjury the following is true and correct:

1. My name is Professor Pierre-Louis Toutain. I submit this declaration in support of Defendant The New York Racing Association, Inc.'s ("NYRA") opposition to Plaintiff Bob Baffert's ("Plaintiff") motion for preliminary injunction filed in the above-captioned case.

2. I received my Veterinary Degree from National Veterinary School of Toulouse in 1972 and my PhD in Pharmacology from National Polytechnic Institute of Toulouse in 1988.

3. I am a founding member and former Chairman (2003-2009) of the European College for Veterinary Pharmacology and Toxicology. From 2015 to 2018, I served as the President of the European Association for Veterinary Pharmacology and Toxicology. I also previously served as the Deputy Chairman of the Animal Health Department of the National Institute of Agronomical Research from 2002 to 2009.

4. I was a professor of Physiology & Therapeutics at the National Veterinary School at Alfort (Paris) from 1988 to 1990 and then at the National Veterinary School of Toulouse from 1990 to 2013. From 2013 to 2016, I held the position of Emeritus Professor at

the University of Toulouse. I am currently a Distinguished Visiting Professor of the Royal Veterinary College at the University of London.

5. In 2009, I received the Lloyd E. Davis Award of the American Academy of Veterinary Pharmacology and Therapeutics for my significant contributions to the advancement of the field of veterinary comparative pharmacology throughout my career. In 2009, I also received the title of Doctor of Veterinary Medicine Honoris Causa by the University of London.

6. Upon NYRA's request, I have reviewed the affidavit of Dr. Steven A. Barker — which Plaintiff submitted in support of his motion for a preliminary injunction — and offer the following statements in response thereto.

7. Betamethasone is a synthetic corticosteroid that has a potent anti-inflammatory effect.

8. In veterinary medicine, betamethasone is administered to a range of species, including horses, to treat inflammatory conditions, shock circulatory collapse, and for other similar uses.

9. Betamethasone and dexamethasone have the same chemical structure, except in a respect not relevant here (e.g., the conformation of the same chemical structure). Accordingly, betamethasone and dexamethasone are considered interchangeable congeners (in other words, of the same kind or category) in human medicine (Boland 1962).[1] The two substances also have equivalent glucocorticoid activity in veterinary medicine (Riviere and

[1] Full citations for the sources I reference in this declaration can be found in ¶ 18.

Papich 2017). Because dexamethasone has been studied much more than betamethasone, I refer to the known data for dexamethasone as a congener of betamethasone in horses.

10. All corticosteroids (including bethamethasone) are effective in alleviating the symptoms associated with inflammation. However, they do not cure the underlying cause of the inflammation.

11. As a result, corticosteroids have the potential to "mask" injuries, allowing a horse to compete when it otherwise should not (Knych et al. 2020). This is not only a problem for the fairness of the races, but also for the welfare of the animals. Research has shown that catastrophic injury is more frequent in horses treated with corticosteroids. An Australian survey reported that Thoroughbred racehorses receiving local corticosteroid injection suffer musculoskeletal injury at approximately 4.5 times the rate of horses not receiving treatment (Whitton et al. 2014). For horses receiving multiple injections, the rate is approximately twice that of horses receiving a single injection (Whitton et al. 2014).

12. Corticosteroids possess other properties, some of which are of special interest for doping control because, as reported in human medicine, corticosteroids produce a euphoretic effect; that is, a false sense of well-being (Goldberg and Wise 1987). This property is also noted in at least one textbook of veterinary pharmacology (Riviere and Papich 2017).

13. Given concerns for the fairness of racing and the welfare of horses and jockeys, the use of corticosteroids is tightly regulated in racing horses. To this end, regulators of horse racing establish an appropriate blood or plasma screening limit for corticosteroids.

14. Contrary to Dr. Barker's unsupported assertion, plasma concentrations of 20 picograms measured per liter of plasma (pg/mL) do not constitute only traces of betamethasone without pharmacological effect. Studies and other scientific data demonstrate that plasma

concentrations in horses ranging anywhere from 7 to 60 pg/ml picograms are sufficient to obtain 50% of the maximum possible effect of dexamethasone/betamethasone (Ekstrand et al. 2015; Ekstrand et al. 2016; Knych et al. 2020).

15. Betamethasone can also be administered locally by injecting it directly into a joint cavity. After a single intra-articular dose of 9 milligrams, plasma betamethasone concentration is about 20 to 30 pg/mL after a delay of 48 hours (Knych et al. 2017). Such plasma concentrations are relevant regarding a local effect of betamethasone. The current Racing Medication and Testing Consortium (RMTC) regulatory recommendation for betamethasone includes a 10 pg/mL threshold concentration in plasma with a corresponding 7-day withdrawal time (Knych et al. 2017), and it is based on a study described in a RMTC position paper (http://www.antidopingscience.com/wp-content/uploads/2017/10/2017-01-13-RMTC-Position-Paper-on-Corticosteroids-EC-FINAL.pdf).

16. According to Dr. Barker, it is "of great concern" that a finding of 21 pg/mL of betamethasone would exceed the relevant regulatory threshold. I disagree. An even lower screening limit, 5 pg/mL for example, could be enforced by considering only the residual effects of dexamethasone/betamethasone. However, such a threshold is generally not retained for reasons of analytical reproducibility for routine screening even if such very low concentrations can be effectively measured with the modern analytical tools available.

17. In conclusion, I believe that a plasma concentration of 21 pg/mL is significant for betamethasone, a substance which can locally or systemically increase the performance of a racehorse with or without clinical manifestation of inflammation.

18. I relied on the following sources when reviewing Dr. Barker's affidavit:

a. Boland, E. W. 1962. "Clinical Comparison of the Newer Anti-Inflammatory Corticosteroids." *Annals of the Rheumatic Diseases* 21(2):176–87. doi: 10.1136/ard.21.2.176.

b. Ekstrand, C., U. Bondesson, J. Gabrielsson, M. Hedeland, P. Kallings, L. Olsén, and C. Ingvast-Larsson. 2015. "Plasma Concentration-Dependent Suppression of Endogenous Hydrocortisone in the Horse after Intramuscular Administration of Dexamethasone-21-Isonicotinate." *Journal of Veterinary Pharmacology and Therapeutics* 38(3):235–42. doi: 10.1111/jvp.12175.

c. Ekstrand, C., C. Ingvast-Larsson, L. Olsén, M. Hedeland, U. Bondesson, and J. Gabrielsson. 2016. "A Quantitative Approach to Analysing Cortisol Response in the Horse." *Journal of Veterinary Pharmacology and Therapeutics* 39(3):255–63. doi: 10.1111/jvp.12276.

d. Goldberg, Richard L., and Thomas N. Wise. 1987. "Corticosteroid Abuse Revisited." *The International Journal of Psychiatry in Medicine* 16(2):145–49. doi: 10.2190/01TQ-E1WC-HU3Q-1TYP.

e. Knych, Heather K., Scott D. Stanley, Linda M. Harrison, and Daniel S. Mckemie. 2017. "Pharmacokinetics of Betamethasone in Plasma, Urine, and Synovial Fluid Following Intra-Articular Administration to Exercised Thoroughbred Horses: PK of Intra-Articular Betamethasone in Thoroughbred Horses." *Drug Testing and Analysis* 9(9):1385–91. doi: 10.1002/dta.2170.

f. Knych, Heather K., Daniel Weiner, Rick M. Arthur, Russell Baden, Daniel S. McKemie, and Philip H. Kass. 2020. "Serum Concentrations, Pharmacokinetic/Pharmacodynamic Modeling, and Effects of Dexamethasone on Inflammatory Mediators Following Intravenous and Oral Administration to Exercised Horses." *Drug Testing and Analysis* 12(8):1087–1101. doi: 10.1002/dta.2862.

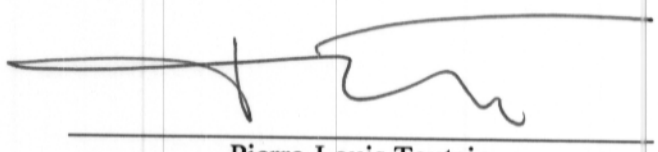
g. Riviere, Jim E., and Mark G. Papich. 2017. *Veterinary Pharmacology and Therapeutics*. John Wiley & Sons.

h. Soma, L. R., C. E. Uboh, Y. Luo, F. Guan, P. J. Moate, and R. C. Boston. 2005. "Pharmacokinetics of Dexamethasone with Pharmacokinetic/Pharmacodynamic Model of the Effect of Dexamethasone on Endogenous Hydrocortisone and Cortisone in the Horse." *Journal of Veterinary Pharmacology and Therapeutics* 28(1):71–80. doi: 10.1111/j.1365-2885.2004.00632.x.

i. Whitton, R. C., M. A. Jackson, A. J. D. Campbell, G. A. Anderson, T. D. H. Parkin, J. M. Morton, and L. A. Boden. 2014. "Musculoskeletal Injury Rates in Thoroughbred Racehorses Following Local Corticosteroid Injection." *Veterinary Journal (London, England: 1997)* 200(1):71–76. doi: 10.1016/j.tvjl.2013.09.003.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on June 30, 2021 in Toulouse, France.



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